

# A Full-Stack Hospital Management System - *Prescripto*

This document details the design and implementation of "Prescripto," a full-stack hospital management system. It outlines the project's objectives, features, technical architecture, and advantages, offering a comprehensive guide for its development and deployment. The system aims to modernize hospital operations by providing a user-friendly interface for patients, doctors, and administrators.

## ***Team Members:***

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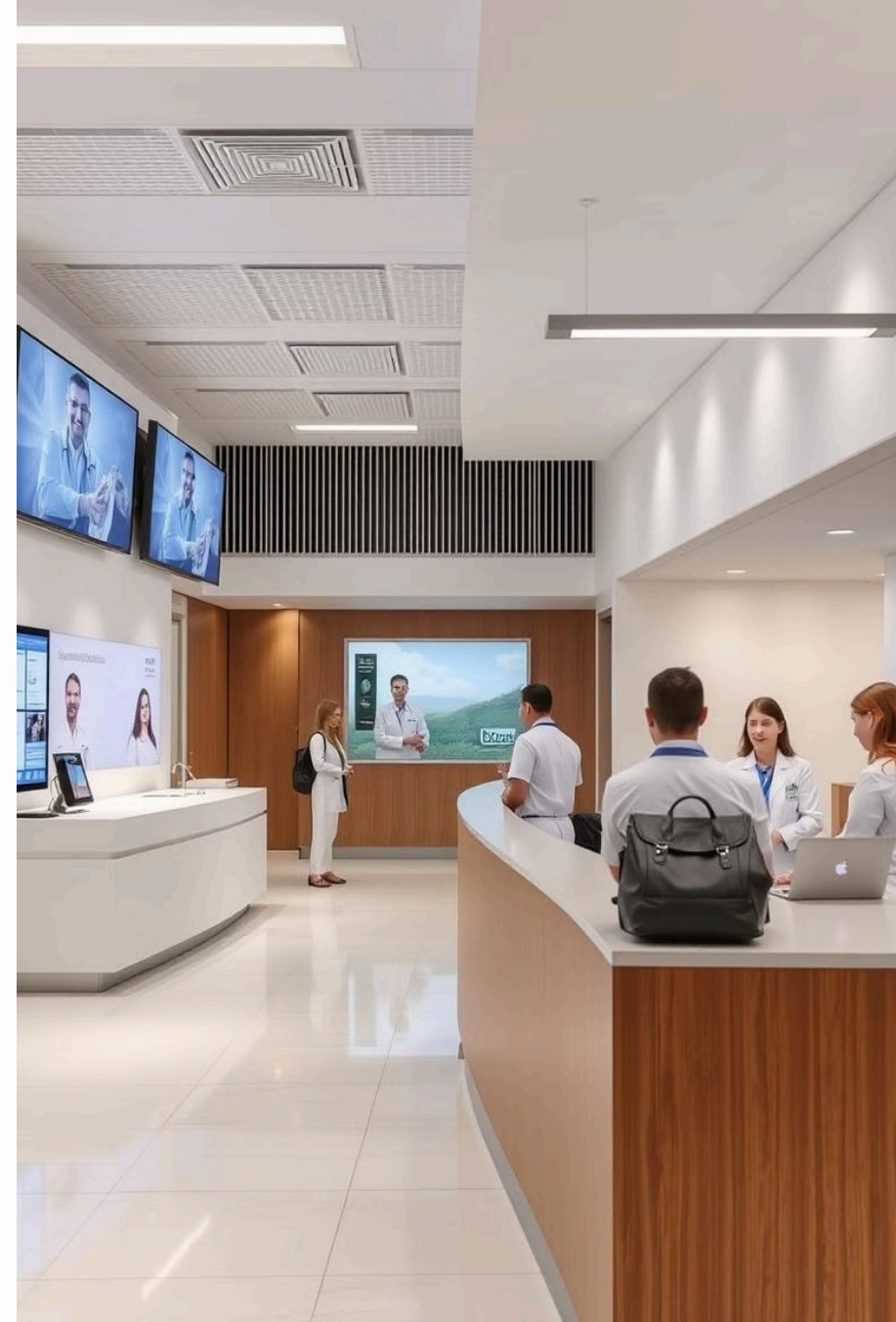
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# 1. Introduction

Prescripto is a full-stack hospital management system designed to modernize and streamline hospital operations. It offers a seamless experience for patients and staff through efficient appointment booking and data management.

This document details Prescripto's design, features, and technical aspects, providing a comprehensive guide for its development and implementation. It focuses on creating an efficient and scalable hospital management solution.



## 2. Project Overview

Prescripto is a web-based application that provides key functionalities for patients, doctors, and admins, ensuring a streamlined hospital management process.

### For Patients:

- Browse doctors by specialization.
- Book appointments with doctors based on specialization.
- View and manage appointments.
- Make payments for appointments using Razorpay.
- Edit personal information if required at any point of time.

### For Doctors:

- View their earnings, number of appointments, number of patients through their dashboard.
- Accept or cancel a particular patient's appointment.
- Manage their profile and availability and can update their information time to time if required.

### For Admin:

- View the number of doctors, number of appointments and number of patients in the dashboard.
- View all the appointments of various patients booked with various doctors and can even update the status of a particular appointment.
- Add new doctors to the system using the Add Doctor Page.
- View all the doctors present in the hospital and can update their availability based on the particular doctor presence in the hospital.

The system is designed to be intuitive, secure, and scalable, ensuring a smooth experience for all users. Its responsive design ensures accessibility across various devices, enhancing usability and convenience.

### 3. Features and Functionalities: Patient



#### Home Page:

Home section with a brief introduction to the hospital. Option to book an appointment, which scrolls to the doctor selection section and showcase of specializations of the hospital along with doctors.



#### All Doctors Page:

List of all doctors with filtering by specialization. Detailed doctor profiles with availability, slot dates, slot times and booking options.



#### About Us Page:

Highlights and information about the hospital, including its mission, vision, and values.



#### Contact Us Page:

Contact details for the hospital, including address, phone number, and email address.

#### Login/Register Page:

Secure authentication for patients to access their accounts and book appointments.

#### My Appointments Page:

View and manage booked appointments. Payment integration using Razorpay.

#### My Profile Page:

View and edit the personal information if required.

# Features and Functionalities: Doctor & Admin

## Doctor Features:

- **Doctor Dashboard:** View earnings, number of appointments, and number of patients details and 5 latest appointments.
- **Appointments Page:** View all the appointments and update the appointment status as completed/cancelled based on the payment.
- **Profile Page:** View the personal information and update it time to time if necessary.

## Admin Features:

- **Admin Dashboard:** View number of doctors, number of appointments, number of patients and 5 latest appointments.
- **Appointments Page:** View all the appointments and update the appointment status.
- **Add Doctor Page:** Adding new doctor into hospital database when a doctor joins the hospital.
- **Doctor List Page:** View all the doctors present in hospital and update their availability status.

These features are designed to provide a comprehensive management system for both doctors and administrators, ensuring efficient operations and improved communication within the hospital environment. Robust security measures are implemented to protect sensitive patient and doctor data.

## 4. Tech Stack



Frontend: React.js

A JavaScript library for building user interfaces, ensuring a responsive and interactive experience.



Backend: Express.js, Mongoose ODM

A Node.js framework for handling server-side logic and Mongoose for MongoDB object modeling.



Database: MongoDB

A NoSQL database for storing and managing data efficiently.



Styling: Tailwind CSS

A utility-first CSS framework for rapid UI development.



Documetation: Swagger JS Doc

Swagger places API specifications such as OpenAPI, AsyncAPI, and JSON Schema at the core of its architecture



Deployment:

- **Frontend:** Vercel
- **Backend:** Render

## 5. System architecture: 3-tier

Prescripto follows a 3-tier architecture to ensure scalability, maintainability, and security. The layers are:



### Presentation Layer (Frontend)

Built using React.js and Tailwind CSS for a responsive and user-friendly interface. Handles user interactions and displays data.



### Application Layer (Backend)

Built using Express.js to handle business logic and API endpoints. Manages requests from the frontend and interacts with the data layer.



### Data Layer (Database)

MongoDB is used to store and manage data efficiently. Provides data persistence and retrieval capabilities.



## 6. Advantages of Prescripto



### Efficient Appointment Management

Patients can easily book, view, and manage appointments, reducing wait times and improving user experience.



### Streamlined Doctor Management

Doctors can view their schedules, earnings, and patient details in one place, enhancing productivity.



### Centralized Admin Control

Admins have full control over the system, including managing doctors and appointments, ensuring smooth operations.



### Secure Payments

Integration with Razorpay and Stripe ensures secure and hassle-free payments, building trust with users.

Built using modern technologies, the system is scalable and can handle a growing number of users and data. It offers a modern and user-friendly interface that enhances the overall experience for all stakeholders.

## 7. Conclusion

Prescripto is a comprehensive hospital management system designed to modernize and streamline the process of booking appointments and managing hospital operations. With its user-friendly interface, robust backend, and secure payment integration, it provides a seamless experience for patients, doctors, and admins alike.

This project not only serves as a practical solution for hospital management but also demonstrates our team's ability to design and implement a full-stack application using modern technologies. The system's scalability, security features, and modern design make it a valuable asset for any healthcare facility looking to improve its operational efficiency and patient satisfaction.